UNITED
NATIONS

E

Economic and Social Council

Distr.
GENERAL

E/1994/74
14 June 1994

ORIGINAL: ENGLISH

Substantive session of 1994
Agenda item 6 (j)*

ECONOMIC AND ENVIRONMENTAL QUESTIONS: CARTOGRAPHY

Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific

Report of the Secretary-General

SUMMARY

The Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific was convened in accordance with Economic and Social Council decision 1991/222. The Conference, which was held in Beijing from 9 to 18 May 1994 focused on recent technological achievements in cartography and related fields and their applications and impact on economic and social development. Particular attention was paid to human resources development, regional cooperation and coordination, and technology transfer.

Acknowledging both technological advances and the enhanced role of cartographic applications, the Thirteenth Conference, a turning-point for United Nations Regional Cartographic Conferences for Asia and the Pacific, reappraised the goals of cartography and related techniques and, consequently, those of national cartographic surveys to meet the "sustainability challenge" of the twenty-first century. It was felt that cartographic technologies could successfully contribute to the management priorities of Governments as well as to the welfare expectations of the people.

Bearing in mind the important contribution made by the United Nations Regional Cartographic Conferences for Asia and the Pacific to the regional cartographic community, the participants recommended that the Economic and Social Council should convene the Fourteenth Conference for Asia and the Pacific in mid-1997. It would focus primarily on the contribution of surveying and mapping and charting in support of the implementation of Agenda 21.

* E/1994/100.

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INTRODUCTION

1. The Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific was convened, in accordance with Economic and Social Council decision 1991/222, in Beijing from 9 to 18 May 1994. The Government of China hosted the Conference through the National Bureau of Surveying and Mapping. The Conference was attended by 204 representatives and observers from 36 countries and territories 1/ and 4 international scientific organizations. 2/ The Conference elected the representative of China as President.

2. The Conference has been recognized as a focal point for technical cooperation, technology transfer and programme coordination for the countries of the Asia and Pacific region. The agenda of the Thirteenth Conference reflected that role and was designed to address the specific needs and requirements of an economically fast-growing region. Rather than reporting on past achievements, the agenda was forward-looking. In view of the impact of new technology, and its relationship to policy, economic and social development and progress in surveying, mapping and charting, the Conference addressed four major topics:

1. Current status and issues of surveying, mapping and charting on the national level: needs and requirements versus reality in the region;

2. New trends in technology and their applications;

3. Human resources development;

4. Regional cooperation and technology transfer.

3. The work of the Conference was organized around four technical committees. As recommended, there was no specific agenda item for the country reports. National programmes were none the less addressed in the technical committees as they related to the topics considered by those committees. The Conference considered a full range of subjects pertinent to cartography as defined by the United Nations: geodesy, surveying and mapping, hydrography, photogrammetry and remote sensing, digital databases, and Geographic and Land Information Systems (GIS/LIS). Committee I, on cartographic data acquisition and supporting activities, was chaired by the representative of the Philippines; Committee II, on cartographic data manipulation, by the representative of Malaysia; Committee III, on cartographic data depiction, by the representative of Indonesia; and Committee IV, on issues related to human resources development, regional cooperation and technology transfer, by the representative of Viet Nam. The Conference adopted 20 draft resolutions under three headings: general policy, transfer of technology and institutional issues.

4. The proceedings of the Conference will be issued in two volumes. Volume I will contain the report of the Conference, including the resolutions adopted. Volume II will contain the technical papers presented at the Conference.

I. FINDINGS

5. There was extensive discussion of new technologies and their applications, particularly in the field of geodesy, digital databases and Geographic and Land Information Systems (GIS/LIS), which were becoming more and more relevant to the needs of civilian users. The Conference also felt the need to expand its horizons, to a more global perspective, beyond the exchange of technological information and the question of bilateral technology transfer. It was suggested that the Conference should help to apply the technology and information gathered for cartographic purposes to the elimination of poverty, strengthening of the strategy for sustainable development, relief from natural disasters and preservation of the environment, in support of Agenda 21.

6. According to the Conference, the use of the Global Positioning System (GPS) for establishing geodetic infrastructures was becoming the tool of choice, since it was the most cost-effective application of the currently available technology. Many papers highlighted the role of GPS-equipped monitoring stations and networks in measuring crustal deformation and plate motion to monitor and provide advance warning of earthquakes and for other natural disaster evaluation.

7. The need for modern cadastral systems was also stressed, since they were critical to land-resource management. Those systems supported an efficient land market, the provision of social justice, and efforts to improve productivity and facilitate the efficient management of the environment.

8. As regards navigational charting, it was pointed out that little progress had been achieved in the seven years since the Eleventh United Nations Regional Cartographic Conference for Asia and the Pacific. In the interest of navigational safety, marine resource management, maritime trading and the overall sustainable development of the region, it was felt that regional cooperation should be stepped up, with the United Nations, particularly the Economic and Social Commission for Asia and the Pacific (ESCAP), lending more vigorous support. The shortage of financial resources was regarded as the major impediment to the implementation of technical cooperation programmes in this sector. Several papers indicated that with GPS now providing accurate positioning data, and advanced computer systems able to handle large digital databases, it was possible to improve navigation safety as ship navigation moved into the digital environment. The need to adopt a geocentric reference system was stressed and recommendations were made to that effect.

9. There was some discussion of the contribution of space technology, particularly satellite remote-sensing systems, to cartographic uses. It was felt that satellite systems, although satisfying positional accuracy, were marginal with respect to detectability and height determination for use in topographic mapping. However, the merger of satellite and aerial image data with other GIS data would be a special challenge for mapping in the future. It was the opinion of some participants that in view of the current and future data acquisition possibilities, GIS development today was more of an institutional problem than a technical one. Finally, many participants believed that in spite of the impressive technical advances made by space technology, there were still

difficulties in obtaining appropriate environmental information in support of sustainable development.

10. It was noted that photogrammetric work-stations, used to transform aerial photographs into topographic maps, would become fully digital over time and would replace analytical plotters for topographic mapping.

11. Digital databases and Geographic and Land Information Systems (GIS/LIS) were of particular interest to the Conference. Some 21 technical and country papers addressed those topics in Committee III. It was noted that a large number of countries within the region had now launched national Geographic Information Systems, and some were already in the application stage. The Conference emphasized that international and bilateral cooperation were vehicles for the exchange of experience and a necessity for achieving standards for the development of regional and global databases. One of the papers submitted by the United Nations Secretariat 3/ stressed that the objective in developing a national or regional geographic data infrastructure was to efficiently provide the fundamental geographic data needed to support sound economic, social and environmental decision-making. GIS/LIS technology had the potential to achieve those benefits rapidly and in a cost-effective manner.

12. The Conference noted that the implementation of spatial data systems required setting certain standards (e.g. with regard to the database, transfer mechanisms and procedures). As a result of the evolving demand, many national surveys were more attentive in providing the data in a form that would better meet the needs of the users. Many papers described how surveys were responding to user needs by developing geographic databases as a major component of their country's geographic infrastructure. Noteworthy international and bilateral collaborative efforts were also reviewed. It was further emphasized that rapidly expanding urban agglomerations represented an especially urgent requirement for up-to-date integrated land information that could be used to design policies and development programmes for efficient use of urban land.

13. The need to set up a permanent regional GIS infrastructure committee for sharing experience was addressed by the Conference. The committee would bring together the heads of the national mapping and surveying organizations to discuss, select and agree on GIS standards, GIS infrastructure and institutional development, inter alia, and to establish links with related bodies in the rest of the world.

14. It was further noted that to address the challenge of environmental protection, geographic datasets should also include information on such issues as vegetation, soils, geology, climate and various economic indices.

15. The work of Committee IV, which dealt with human resources development and technical cooperation, was particularly important. The Conference felt that political decision makers lacked an appreciation of the role of map production in the economic and social development process. Consequently, national cartographers had less access to new technology. However, it was pointed out that as a result of the increased demand for "cartographic products", government-funded national surveys had a bright future, subject to good

leadership, adaptation to technological advances and increased financial self-reliance.

16. The reforms implemented by many countries of the Asia and Pacific region whose economies were in transition had compelled their Governments to reassess their human resource development policies and to align them with the requirements of a market economy. As cartographic techniques were developing quickly, many countries faced difficulties in keeping abreast of the more advanced technologies, and expertise enhancement was lagging. The Conference acknowledged the need to organize regional workshops regularly and provide expert advisory services with a strong involvement in the United Nations system, in collaboration with international scientific and professional organizations. Many countries indicated their willingness to step up regional cooperation and technology transfer. Natural disaster prediction and mitigation was cited as an area for increased cooperation. Many papers described ongoing technical cooperation projects and highlighted their successes as well as their implementation difficulties.

17. The issue of gender in cartography was also touched upon. The lack of representation of women at the Conference was noted as an example of a general situation whereby women faced difficulties in reaching the senior management level. However, some countries of the region pointed out that women cartographers, in substantial numbers, had attained middle management levels. Two papers made specific recommendations on how to encourage more women to enter the discipline.

18. The technical cooperation activities undertaken in the region by the United Nations Secretariat, through the Department for Development Support and Management Services were described. Against a background of changes in the way such cooperation was being provided, it was pointed out that funding for cartographic projects per se was becoming more limited. None the less, cartography was a critical tool in many United Nations funded projects which aimed at assisting developing countries and economies in transition in meeting the goals set by Agenda 21. In that regard an important paper entitled "The surveyor, the environment and Agenda 21", prepared by Peter Byrne, Vice-President, FIG, highlighted the role and contribution of cartographers in assisting in the protection and monitoring of the environment and in implementing Agenda 21.

19. It was noted that the lack of financial commitment was the principal reason for the low rate of implementation of the 33 resolutions adopted by the Twelfth United Nations Regional Cartographic Conference for Asia and the Pacific three years ago. The Conference further noted with concern that the least developed countries and other low-income developing countries were not adequately represented at the Thirteenth Conference. Those countries were encouraged to submit reports on their special needs along with their country reports.

20. As the Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific was held shortly after the Global Conference on the Sustainable Development of Small Island Developing States (Barbados, 25 April-6 May 1994), the Thirteenth Conference took note of the specific needs to those environmentally vulnerable States and the critical contribution of cartography

in alleviating the potential for environmental damage and natural disasters. It also noted with regret that the participation of the small island States of the Pacific was very limited and stressed that future conferences should include specific agenda items relevant to the needs of such States.

21. The deliberations of the four committees confirmed that the advances in cartographic technology were steadily closing the gap with practical user requirements. The challenge for the cartographic community was to keep abreast of those advances and develop them into cost-effective applications in the wide field of surveying, mapping and charting. The task of the United Nations conferences was to promote those cartographic advances, through technical cooperation and technology transfer and to enhance specific user applications for the management priorities of the countries of the region.

22. A list of the 20 resolutions adopted by the Conference and the proposed provisional agenda for the Fourteenth United Nations Regional Cartographic Conference for Asia and the Pacific are contained in annexes I and II below.

II. RECOMMENDATIONS TO THE COUNCIL

23. In view of the important contributions made by cartographic technology and applications in the information stream to decision makers, planners and the public at large, and by the United Nations Regional Cartographic Conferences for Asia and the Pacific in strengthening technical cooperation and the transfer of technology within the countries of the region, the Conference recommends that the Economic and Social Council:

(a) Endorse its recommendation that the Fourteenth United Nations Regional Cartographic Conference for Asia and the Pacific should be convened for five working days in mid-1997, with the primary focus on the contribution of surveying, mapping and charting in support of the implementation of Agenda 21;

(b) Request the Secretary-General to take measures, where appropriate, to implement the other recommendations made by the Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific; in particular, within available resources, the United Nations should continue to support surveying, mapping and charting activities in the Asia and Pacific region and inter alia facilitate the participation of the least developed countries and the small island developing States of the region.

Notes

1/ Australia, Azerbaijan, Bangladesh, Chile, China, Cyprus, Democratic People's Republic of Korea, Finland, Germany, Holy See, Hong Kong, India, Indonesia, Iraq, Japan, Malaysia, Marshall Islands, Mongolia, Nepal, Netherlands, New Zealand, Oman, Philippines, Portugal, Qatar, Republic of Korea, Russia, Saudi Arabia, Singapore, Thailand, Turkey, United Arab Emirates, United Kingdom of Great Britain and Northern Ireland, United States of America, Vanuatu, Viet Nam.

2/ International Cartographic Association (ICA), International Federation of Surveyors (FIG), International Hydrographic Organization (IHO), International Society for Photogrammetry and Remote Sensing (ISPRS).

3/ "Developing a national and regional geographic data infrastructure", prepared by Drew Clarke (FIG).

Annex I

RESOLUTIONS ADOPTED BY THE CONFERENCE a/

General policy

1. Support for surveying and mapping activities in the region
2. Fourteenth United Nations Regional Cartographic Conference for Asia and the Pacific
3. Attendance at future United Nations Regional Cartographic Conferences for Asia and the Pacific
4. Pacific Small Island Developing States
5. Access to information for development
6. The role of surveying, mapping and charting in the implementation of Agenda 21
7. Women in cartography

Transfer of technology

8. Adoption of a geocentric reference system
9. Hydrographic surveying and nautical charting
10. Cadastral surveying and mapping in Asia and the Pacific
11. National surveying and mapping authorities
12. GIS standardization
13. Capacity-building for Agenda 21
14. Legislation on surveying and mapping
15. Geographical names

Institutional issues

16. Establishment of a permanent regional GIS infrastructure committee
17. Geographic Information Systems and Land Information Systems (GIS/LIS)
18. Organizational development to meet Agenda 21

19. Institutional framework for geospatial data management

Vote of thanks

20. Vote of thanks to the Government of China.

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a/ The text of the resolutions will be included in Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific, vol. I, Report of the Conference.

Annex II

PROPOSED PROVISIONAL AGENDA FOR THE FOURTEENTH UNITED NATIONS REGIONAL CARTOGRAPHIC CONFERENCE FOR ASIA AND THE PACIFIC

1. Opening of the Conference.

2. Election of the President and other officers of the Conference.

3. Objectives of the Conference.

4. Organizational matters:

   (a) Adoption of the rules of procedure;

   (b) Adoption of the agenda;

   (c) Establishment of technical committees and election of Chairmen and Rapporteurs;

   (d) Organization of work;

   (e) Credentials of representatives to the Conference.

5. United Nations and country reports on the implementation of the resolutions of the Thirteenth United Nations Regional Cartographic Conference for Asia and the Pacific.

6. Reports on the contribution of surveying, mapping and charting to the implementation of Agenda 21:

   (a) Environmental management, including management of the oceans, and disaster mitigation, reporting and documenting;

   (b) Public access to and exchange of information;

   (c) Land reform, land management and development;

   (d) Demography and human settlements policies;

   (e) Desertification and land degradation;

   (f) Human resources development;

   (g) Safety of maritime and air navigation, including hydrographic surveys and nautical charting;

   (h) Other applications of surveying and mapping to support the implementation of Agenda 21.

7. Reports on the regional implementation of the Programme of Action for the Sustainable Development of Small Island Developing States.

8. Policy on and management of national survey activities in the field of surveying and mapping.

9. Technical cooperation and transfer of technology.

10. Review of the achievements of the Conference and provisional agenda for the Fifteenth United Nations Regional Cartographic Conference for Asia and the Pacific.

11. Adoption of the report of the Conference.